3350 Direct Access Storage, Models A2, A2F, B2, B2F, C2, C2F

Reference Summary

GX20-1983-0

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The capacity table and the speed and capacity data in this reference summary card are based on information in *Reference Manual for IBM 3350 Direct Access Storage* (GA26-1638). This card will be updated from time to time, but GA26-1638 is the authoritative source and will be the first to reflect changes.

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Speed

Seek time*
- Cylinder to cylinder . . . . . 10 ms
- Average . . . . . 25 ms
- Maximum . . . . . 50 ms

Data rate . . . . . 1198 KB/second

Latency
- Minimum . . . . . 0 ms
- Average . . . . . 8.4 ms
- Maximum . . . . . 16.7 ms

*The fixed heads on Models A2F, B2F and C2F provide up to 1.144 million bytes of zero-seek-time storage per drive.

Capacity

	Native Mode	Compatibility Modes	
		3330-1	3330-11
Logical volumes per drive	1	2	1
Cylinders per drive	555 (plus 5 alternates)	404 per logical volume (plus 7 alternates)	808 (plus 7 alternates)
Tracks per cylinder	30	19	19
Tracks per drive	16,650 (plus 150 alternates)	7,676 per logical volume (plus 133 alternates)	15,352 (plus 133 alternates)
Track capacity (bytes)	19,069	13,030	13,030
Cylinder capacity (bytes)	572,070	247,570	247,570
Drive capacity (bytes)	317.5 million	100 million per logical volume	200 million

Fixed Head Storage Capacity — Models A2F, B2F, C2F

The fixed head storage capacity takes the place of an equal amount of storage under the moving heads.

	Native Mode	Compatibility Modes	
		3330-1*	3330-11
Logical cylinders	2 (Nos. 1 - 2)	3 (Nos. 1 - 3)	3 (Nos. 1 - 3)
Tracks per logical cylinder	30 (Nos. 0 - 29)	19 (Nos. 0 - 18)	19 (Nos. 0 - 18)
Drive capacity (bytes)	1,144,140	742,710	742,710
Unit capacity (bytes)	2,288,280	1,485,420	1,485,420

*In 3330-1 Compatibility Mode, fixed head storage is associated with the first of the two logical volumes.

Records per Track

The number of equal-length records that can be contained on one track depends on track capacity and record size. It can be calculated through use of the following formulas, which take into consideration the home address, R0 space, and skip defect allowance (overhead).

3350 Native Mode

In this mode the number of equal-length records per track* is:

$$\frac{19{,}254}{KL + DL + C} \quad \begin{matrix}\text{(bytes per track)} \\ \text{(bytes per record)}\end{matrix}$$

where:

KL = key length
DL = data length
C (overhead per record)
= 185 if KL = 0
267 if KL ≠ 0

3330-1 and 3330-11 Compatibility Modes

In these modes the number of equal-length records per track* is:

$$\frac{13{,}165}{KL + DL + C} \quad \begin{matrix}\text{(bytes per track)} \\ \text{(bytes per record)}\end{matrix}$$

where:

KL = key length
DL = data length
C (overhead per record)
= 135 if KL = 0
191 if KL ≠ 0

*For the number of unequal-length records per track see "Track Capacity" in *Reference Manual for IBM 3350 Direct Access Storage* (GA26-1638).

Use of Table

Following are some examples of how the capacity table may be used. In the table, "records" refers to physical records.

- Assume 142-byte logical records to be recorded unblocked (data length = 142) and without keys. The table indicates that 58 records can be placed on each track (1740 on each cylinder and 965,700 on each drive). Reducing the record length by 1 byte permits 59 records per track, an increase of 16,650 records per drive. Alternatively, the record length can be increased by 4 bytes without decreasing the number of records per drive.

- To see the effect of blocked records, assume the same 142-byte logical records are to be recorded without keys. Also assume a blocking factor of 20 (data length = 2840). The table indicates that 6 physical records can be written on each track for a total of 120 logical records per track (compared with 58 logical records if unblocked).

- Assume 100-byte logical records, unblocked, and formatted with keys (data length = 100, key length = 8). The number to look up in the "with key" part of the table is 108 (key length + data length). There will be 51 records per track.

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Capacity Table — Native Mode

Bytes per Record				Number of Records		
Without Keys		With Keys		Per	Per	Per
Min.	Max.	Min.	Max.	Track	Cylinder	Drive
9443	19069	9361	18987	1	30	16650
6234	9442	6152	9360	2	60	33300
4629	6233	4547	6151	3	90	49950
3666	4628	3584	4546	4	120	66600
3025	3665	2943	3583	5	150	83250
2566	3024	2484	2942	6	180	99900
2222	2565	2140	2483	7	210	116550
1955	2221	1873	2139	8	240	133200
1741	1954	1659	1872	9	270	149850
1566	1740	1484	1658	10	300	166500
1420	1565	1338	1483	11	330	183150
1297	1419	1215	1337	12	360	199800
1191	1296	1109	1214	13	390	216450
1099	1190	1017	1108	14	420	233100
1019	1098	937	1016	15	450	249750
948	1018	866	936	16	480	266400
885	947	803	865	17	510	283050
829	884	747	802	18	540	299700
778	828	696	746	19	570	316350
732	777	650	695	20	600	333000
691	731	609	649	21	630	349650
653	690	571	608	22	660	366300
618	652	536	570	23	690	382950
586	617	504	535	24	720	399600
556	585	474	503	25	750	416250
529	555	447	473	26	780	432900
503	528	421	446	27	810	449550
479	502	397	420	28	840	466200
457	478	375	396	29	870	482850
437	456	355	374	30	900	499500
417	436	335	354	31	930	516150
399	416	317	334	32	960	532800
382	398	300	316	33	990	549450
366	381	284	299	34	1020	566100
350	365	268	283	35	1050	582750
336	349	254	267	36	1080	599400
322	335	240	253	37	1110	616050
309	321	227	239	38	1140	632700
297	308	215	226	39	1170	649350
285	296	203	214	40	1200	666000
274	284	192	202	41	1230	682650
263	273	181	191	42	1260	699300
253	262	171	180	43	1290	715950
243	252	161	170	44	1320	732600
234	242	152	160	45	1350	749250
225	233	143	151	46	1380	765900
217	224	135	142	47	1410	782550
208	216	126	134	48	1440	799200
201	207	119	125	49	1470	815850
193	200	111	118	50	1500	832500

Capacity Table (cont'd.)

Bytes per Record				Number or Records		
Without Keys		With Keys		Per	Per	Per
Min.	Max.	Min.	Max.	Track	Cylinder	Drive
186	192	104	110	51	1530	849150
179	185	97	103	52	1560	865800
172	178	90	96	53	1590	882450
166	171	84	89	54	1620	899100
159	165	77	83	55	1650	915750
153	158	71	76	56	1680	932400
147	152	65	70	57	1710	949050
142	146	60	64	58	1740	965700
136	141	54	59	59	1770	982350
131	135	49	53	60	1800	999000
126	130	44	48	61	1830	1015650
121	125	39	43	62	1860	1032300
116	120	34	38	63	1890	1048950
112	115	30	33	64	1920	1065600
107	111	25	29	65	1950	1082250
103	106	21	24	66	1980	1098900
99	102	17	20	67	2010	1115550
95	98	13	16	68	2040	1132200
91	94	9	12	69	2070	1148850
87	90	5	8	70	2100	1165500
83	86	4	4	71	2130	1182150
79	82			72	2160	1198800
76	78			73	2190	1215450
72	75			74	2220	1232100
69	71			75	2250	1248750
66	68			76	2280	1265400
62	65			77	2310	1282050
59	61			78	2340	1298700
56	58			79	2370	1315350
53	55			80	2400	1332000
50	52			81	2430	1348650
47	49			82	2460	1365300
45	46			83	2490	1381950
42	44			84	2520	1398600
39	41			85	2550	1415250
37	38			86	2580	1431900
34	36			87	2610	1448550
32	33			88	2640	1465200
29	31			89	2670	1481850
27	28			90	2700	1498500
25	26			91	2730	1515150
23	24			92	2760	1531800
20	22			93	2790	1548450
18	19			94	2820	1565100
16	17			95	2850	1581750
14	15			96	2880	1598400
12	13			97	2910	1615050
10	11			98	2940	1631700
8	9			99	2970	1648350
6	7			100	3000	1665000
4	5			101	3030	1681650
2	3			102	3060	1698300
1	1			103	3090	1714950